



**Investors Meeting for  
FY2015-2Q Financial Results**

## State of Shimane Nuclear Power Station

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November 10, 2014

The Chugoku Electric Power Co., Inc.

# 1. State of Progress of Compliance Examinations [Shimane Unit 2]

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- As of November 7, 2014, a total of 20 examination gatherings have been held, concerning the "Earthquake & tsunami" and "Plant-related" fields.
- Regarding earthquakes, the site subsurface structure and the "earthquake ground motion determined with identifying the hypocenter", which are prerequisites for standard ground motion assessment, are under examination by an examination gathering.

## Earthquake & tsunami

	Main examination items	Examination Status	Examination outline	◆ Examination situation ★ CEP's assessment
Earthquake	Earthquake ground motion determined without identifying the hypocenter	Completed	Matters relating to standard ground motions regarded as needing to be considered for the power station	◆ Explained that Rumoi and Western Tottori Prefecture Earthquakes will be taken into account (No additional comments)
	Earthquake ground motion determined with identifying the hypocenter	Being implemented		◆ Implementing additional surveys and analyzing their results, so that assessment can be made on the basis of detailed data.
	Subsurface structures of site and surroundings	Being implemented		◆ Explained adequacy of subsurface structure models
	Standard ground motions	Unimplemented		★ Will set Ss-1 (600 gal) through Ss-4.
	Seismic design policy	Unimplemented		★ Assess the equipment as being able to maintain safety with regard to the standard ground motions
	Fracture zones inside site	Unimplemented		★ Assess that there are no fracture zones or active faults
	Stability of ground and inclines	Unimplemented		★ Assess that they are safe
Tsunami	Standard tsunami	Unimplemented	Matters relating to tsunamis regarded as needing to be considered for the power station	★ Set at 9.5 m
	Anti-tsunami design policy	Unimplemented		★ Assess that safety can be maintained (15 m breakwater and watertight doors installed)

# 1. State of Progress of Compliance Examinations [Shimane Unit 2]

Plant-related

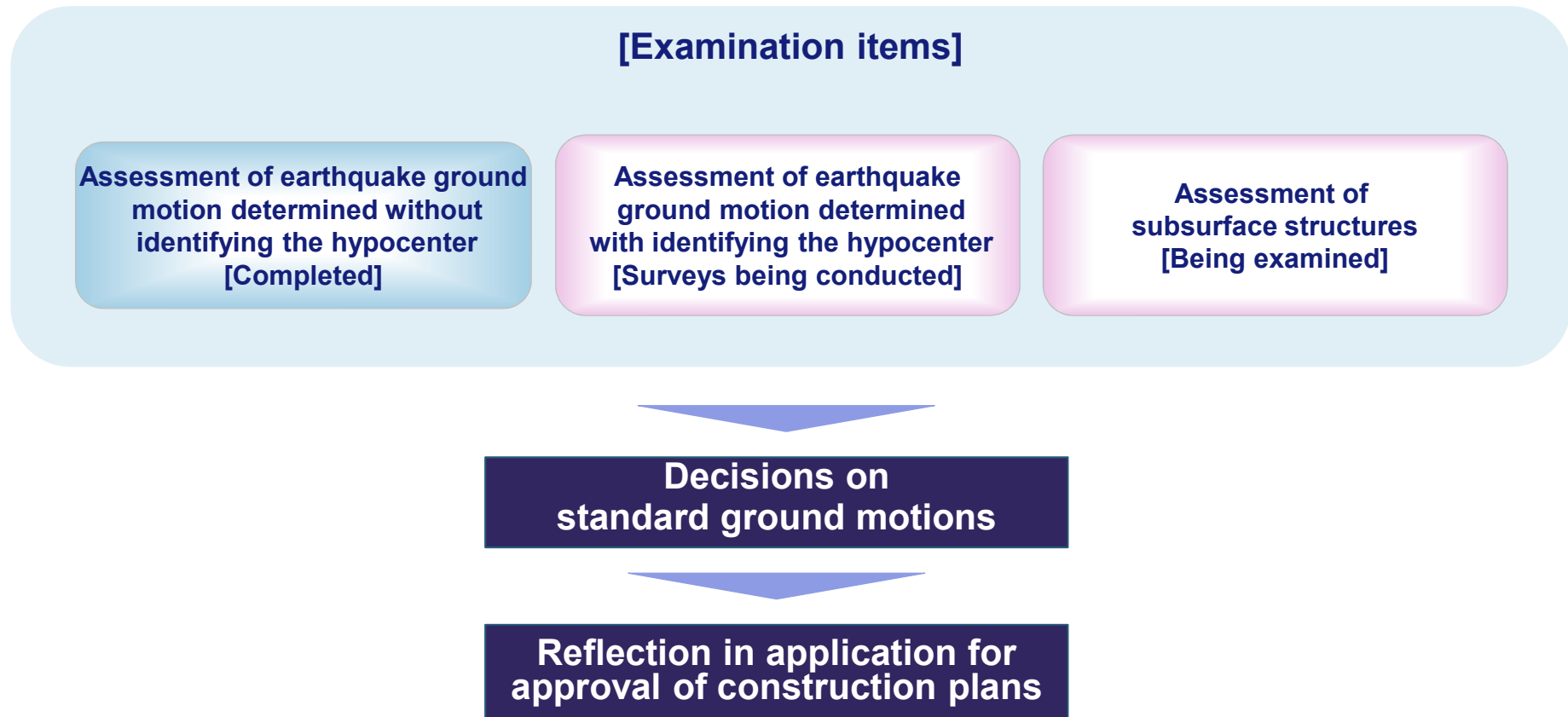
■ Regarding plant-related, the filtered vent equipment, etc., is being examined by an examination gathering.

	Main examination items	Examination status	Examination outline	◆ Examination situation ★ CEP's assessment
Countermeasures for severe accident	Probabilistic risk assessment (PRA)	Being implemented	Quantitative assessment of the probability of the reactor core being damaged and leading to a severe accident, and assessment of efficacy of countermeasures for a severe accident, etc.	◆ Explained the probabilities of damage to the reactor core and rupture of the containment vessel due to interior/exterior events
	Selection of accident sequences	Being implemented		◆ Explained the accident scenarios selected on the basis of the PRA results
	Efficacy assessment	Being implemented		◆ Explained that the severe accident countermeasures are effective for the accident scenarios selected.
	Analytical codes	Unimplemented		★ Assess the adequacy of the analytical programs used in the PRA and efficacy assessment.
	Control room	Unimplemented		★ Assess as 74 mSv in 7 days
	Contingency measure center	Unimplemented		★ Assess as 48 mSv in 7 days
	Filtered vent equipment	Being implemented		Matters relating to the equipment's design, specifications, performance and operation methods
Countermeasures for design basis accidents	Interior inundation	Being implemented	Assessment and countermeasures, etc., regarding newly-added natural disasters	◆ Explaining the impact assessment and countermeasures for interior inundation
	Fire	Being implemented		◆ Explaining the impact assessment of exterior fire; assessment of interior fire still unimplemented.
	Tornados (impact assessment and countermeasures)	Unimplemented		★ Assess for maximum wind speed 69 m/s
	Volcanoes (impact assessment and countermeasures)	Unimplemented		★ Assess for volcano on Ulleung Island, South Korea (approximately 2 cm of volcanic ash)
	Single failure of passive system	Being implemented		◆ Explaining that passive systems have been identified and will be able to maintain their safety functions.
	Protective power supply equipment	Unimplemented		★ Assess reliability of external power supplies

## 2. Flow of Examinations Pertaining to Standard Ground Motions

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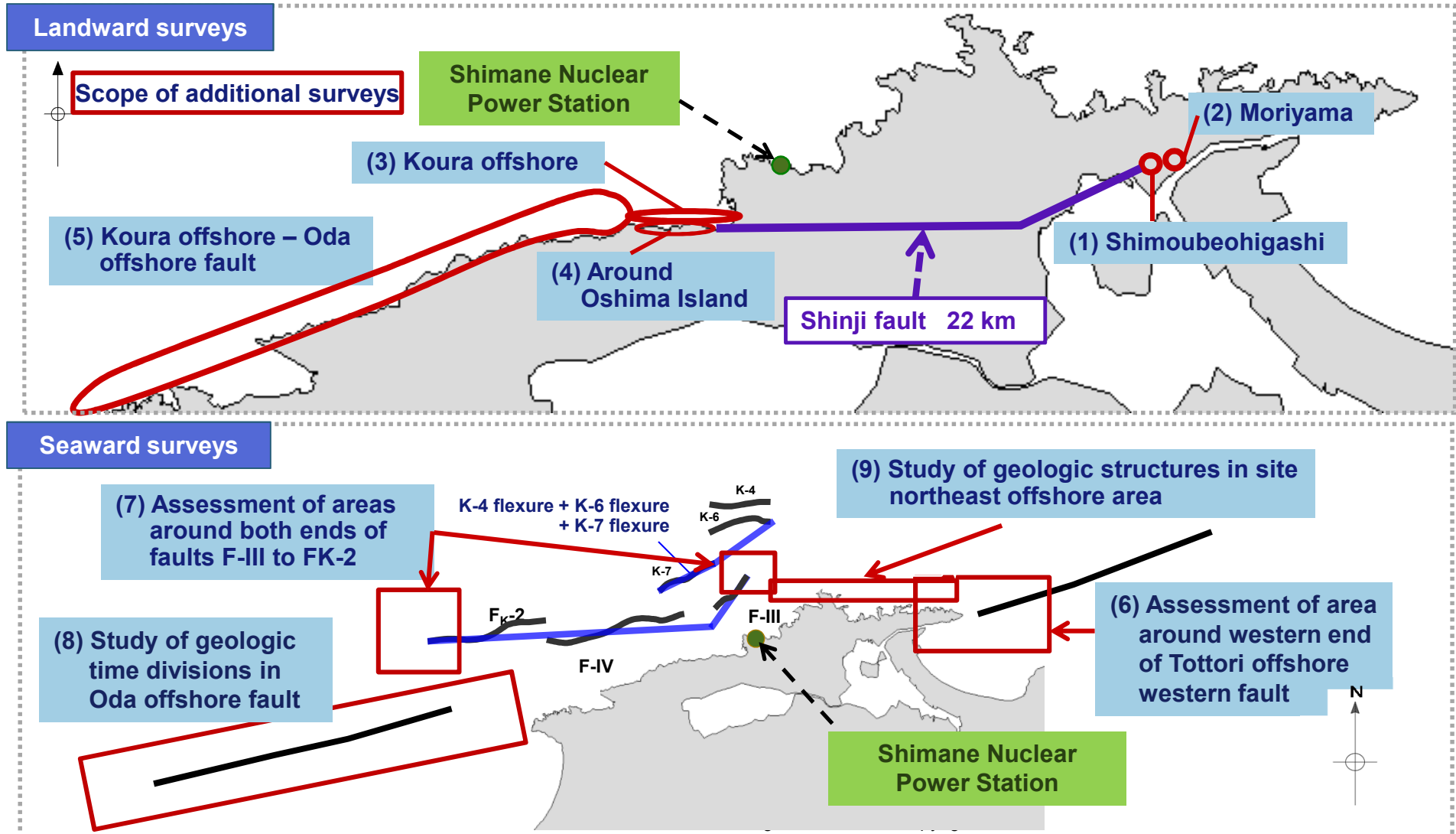
- Establishing the standard ground motions involves assessing the subsurface structures, "earthquake ground motion determined with identifying the hypocenter", and "earthquake ground motion determined without identifying the hypocenter", in the site, then selecting the ground motions that are to be envisioned as occurring at the power station.



### 3. Additional Surveys Pertaining to Assessment of Site Perimeter Active Faults - Outline of Surveys

■ In May, we started additional surveys in order to verify the adequacy of our assessments by expanding our data, in response to comments at the examination gatherings and hearings. The field surveys were completed at the end of October.

[Landward] Trench surveys, drilling surveys, etc. [Seaward] Sonic surveys, bottom-sampling surveys, etc.



### 3. Additional Surveys Pertaining to Assessment of Site Perimeter Active Faults - State of Surveys

- We are currently assessing the survey results, and in the near future we plan to compile them and use them to explain the adequacy of our assessments to date at examination hearings and gatherings relating to the compliance examinations, as early as possible.
- We intend to go on with surveys on a voluntary basis to further expand our data, beyond the surveys conducted in response to the comments at examination gatherings and hearings.

		Subject of survey	Outline of survey
Landward	(1)	Shimoubeshigashi	- Drilling survey - Peel-off survey
	(2)	Moriyama	- Drilling survey - Trench survey - Peel-off survey
	(3) (4)	Koura offshore Around Oshima Island	- Sonic survey - Surface geologic reconnaissance - Seabed survey - Drilling survey
	(5)	Koura offshore – Oda offshore fault	- Sonic survey
	Seaward	(6)	Tottori offshore western fault
(7)		Faults F-III to F <sub>K</sub> -2	- Sonic survey
(8)		Oda offshore fault	- Sonic survey - Bottom-sampling survey
(9)		Site northeast offshore	- Sonic survey

- We used a drilling survey to determine the position where the fault passes through, then selected the trench survey location on the basis of such position.
- We are currently determining the activity periods, etc., from the geologic layers and so on at that location which were determined by the trench survey.

Drilling survey in progress



In this type of survey, successive bar-shaped samples of geologic layers are taken using drilling machinery, and the geologic features and structures are determined by observing the samples.

Trench survey in progress



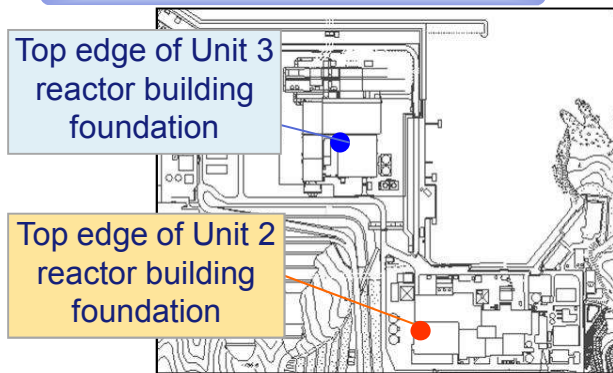
In this type of survey, a trench is excavated in the ground surface, and the geologic features and structures are determined by directly observing the stratification planes in the excavation.

# 4. State of Examination of Assessment of Subsurface Structures

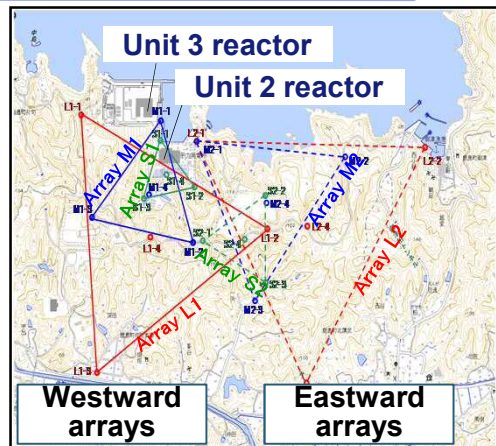
■ From the seismic observation records and subsurface survey results for the site, we verified that the site's subsurface structure has no special propensity to markedly amplify seismic waves. We are currently accommodating examination of this at an examination gathering.

## Observation/survey locations

### Site-interior seismic observation



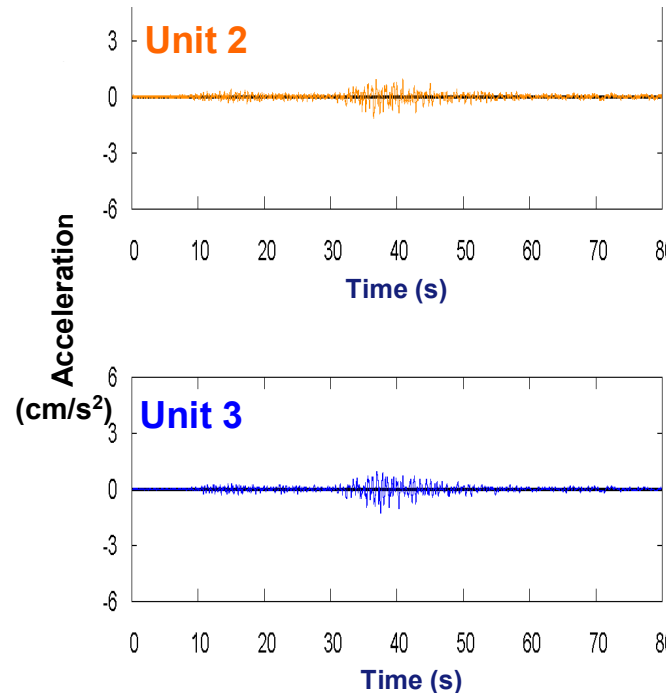
### Microtremor array survey\*



## Observation/survey results

### Site-interior seismic observation

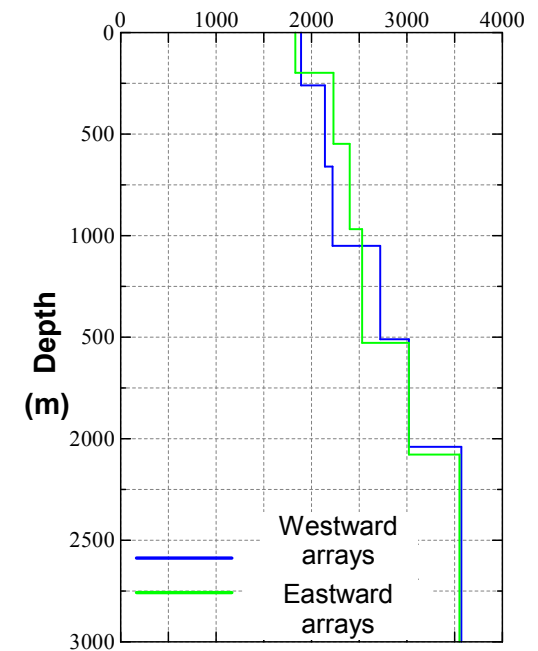
[Acceleration waveforms of observed earthquake]



Comparing the seismic observation records for the top edges of the reactor building foundations of Units 2 and 3, the responses of both buildings are on almost the same level.

### Microtremor array survey\*

S-wave velocity (m/s)



Comparing the velocity structures of the eastward and westward arrays, their same level of velocity layers are distributed at roughly comparable depths.

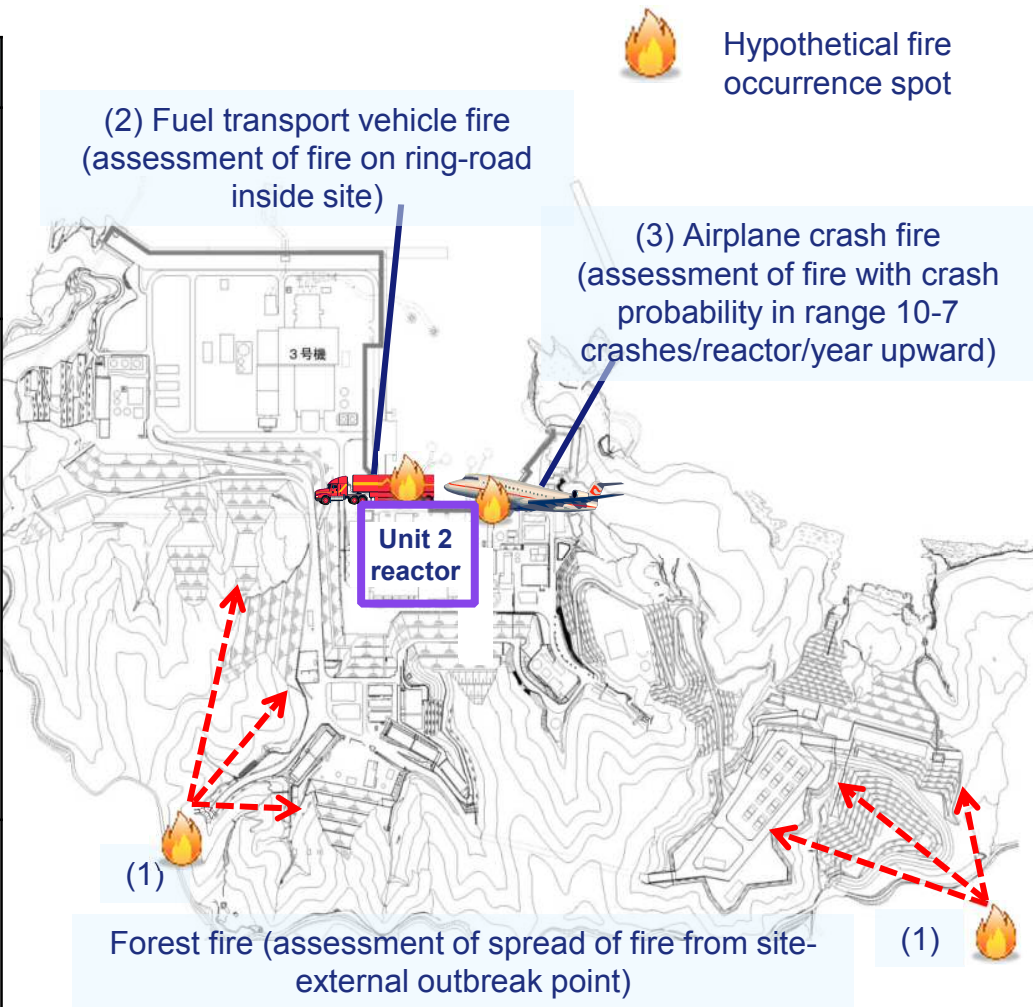
\*Method whereby minute vibration occurring near the ground surface (vibration caused by traffic, sea waves and so on) is measured simultaneously by multiple seismometers arrayed on the surface, and the subsurface structure is inferred from the data they measure.

# 5. State of Examination of Fire Assessment

- Concerning hypothetical exterior fire resulting from events occurring inside or outside the Shimane Nuclear Power Station site, we are explaining that because of protection measures, it would not have impacts on the nuclear reactor facilities.
- Later, we plan to present the results of assessment of interior fire occurring inside a nuclear reactor facility.

## Results of exterior fire assessment

Assessed event	Assessment results
(1) Forest fire	<ul style="list-style-type: none"> <li>■ Implement necessary protection measures, e.g. create fire belt (about 21 m wide)</li> <li>■ Separate reactor buildings, which house important safety facilities, from the outermost fire spread edge by at least the critical distance</li> </ul>
(2) Fire at industrial facility in neighborhood	<ul style="list-style-type: none"> <li>■ No petrochemical industrial complexes or similar within 10 km radius</li> <li>■ No outdoor hazardous substance tanks that need to be considered in surroundings of Shimane Unit 2 (sufficiently distanced from tanks)</li> <li>■ Verify that temperature of reactor building outer walls would be below the allowable limit in spite of a hypothetical fire of a fuel transport truck inside the site</li> </ul>
(3) Fire due to airplane crash	<ul style="list-style-type: none"> <li>■ Verify that temperature of reactor building outer walls would be below the allowable limit in spite of a hypothetical fire caused by a crash into site</li> </ul>
■ Other (soot, fire spread prevention)	<ul style="list-style-type: none"> <li>■ Central control room 's air conditioning would be able to run cycle operation without intake of external air</li> <li>■ Company's self-defense fire brigade permanently stationed inside the power station would be able to implement fire-extinguishing activities to prevent fire spread</li> </ul>



## 6. State of Safety Measure Works

- Construction of the Important Equipment Aseismic Building itself was completed in October, and we are currently carrying out installation and adjustment of equipment inside it.
- We aim to have the filtered vent equipment completed during this fiscal year. The operations of lifting in and installing the filters were implemented in August, and we are currently implementing preparatory works toward installation of the iodine filters.

### Important Equipment Aseismic Building

- Erected on a 50 m elevation.
- A concrete wall has been erected around the Important Equipment Aseismic Building to reduce the effects of radiation.



### Filtered vent equipment

- The filtered vent equipment removes 99.9% of radioactive material (cesium).
- The iodine filters remove 98% of iodine.



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